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Recent advances in understanding the enduring and deadly complication of postpartum haemorrhage

Art and design sometimes have a way of expressing emotions that are difficult to put into words. The Taj Mahal in India, built by a grief-stricken emperor in 1643 as a memorial to his wife who died of postpartum haemorrhage (PPH), reminds us that this obstetric complication is not new. Graham Tydeman's 'Blood Clock' [1] finds a new way of expressing this grief. This magnificent art installation spills blood every 6 minutes to remind us of the frequency of obstetric haemorrhage deaths globally. Both remind us that there is little more tragic than the death of a new mother whilst giving birth.

In this edition of *Best Practice*, we examine some fundamental truths in our understanding of PPH. Aflaifel & Weeks [2] and Hancock *et al* [3] both provide evidence that we rarely treat according to volumes of blood loss. Instead, clinicians tend to use speed of flow and clinical anxiety to decide when to intervene, and only provide blood loss estimates in retrospect to guide volume replacement and ongoing care. Drew & Balki [4] remind us of the basic science that suggests that the myometrial contractile response to oxytocin is greatly reduced by pre-treatment with oxytocin. The clinical importance of this will be tested in the upcoming NIHR 'Carboprost or Oxytocin PPH Effectiveness' (COPE) Study which compares oxytocin and carboprost for the first line treatment of PPH – and that has a subgroup to explore the question in women who have had oxytocin during labour. That trial, as with all future PPH clinical trials, will benefit from the Core Outcome Set developed and described by Meher [5]

Although the problem of PPH seems intractable, our understanding of PPH management is changing. For many years we have been obsessed with reducing blood loss at normal birth. PPH was said to be 'unpredictable' and so the central goal was to provide 'prophylaxis for all'. And with the mantra of evidence-based medicine ringing in our ears, we focussed on results from randomised trials, largely ignoring evidence from observational studies or audit. National and international guidelines reflected this, focussing largely on the reduction of blood loss in the woman included in randomised trials – those having low risk vaginal births.

But after years of focus on normal birth, we now realise that we were looking in the wrong place. PPH deaths and severe morbidity are clustered around complex births – emergency CS, prolonged third stage and placental abruption and praevia. And the solutions are not to ensure 'oxytocin for all' but to provide expert care in the event of complications, and rapid transfer and emergency care once the bleeding starts. Developments in these areas are all covered in this volume. The importance of emergency care and good health care systems to reduce PPH deaths is outlined by Sue Fawcus [6], and surgical care is covered in chapters on placenta accreta Jauniaux et al [7] and hypovolaemic shock (Pacagnella & Borovac-Pinheiro) [8]. All this requires high quality training of staff, a topic covered by Cooper et al [9].

Haematology articles feature strongly in this edition. Few can have missed the results of the huge WOMAN study which showed that tranexamic acid reduces maternal deaths in PPH. The implications for care are covered by Brenner et al [10]. For many of us, the arrival of

bedside clotting assessments has been a transformation, allowing us to gain rapid control and prevent the descent into clotting abnormalities. An update of bedside management is covered by McNamara & Mallaiah [11], whilst Tancred & Bates [12] cover the importance of blood transfusion services for low income settings.

The other recently published mega-trial, the CHAMPION Study, demonstrated the equivalence of carbetocin and oxytocin for PPH prevention. This may be disappointing to some, but has important implications in settings where the cold chain is unstable (Gallos & Coomarasamy [13]. And now, with the agreement to price the heat stable carbetocin at the same price as oxytocin, carbetocin is set to become a staple of low resource setting PPH care.

PPH may be one of the oldest problems in maternity care – but its rate is increasing, and optimal care is changing at a rapid pace. I hope that this edition will provide a set of useful updates to help you provide optimal care.

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